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Addressing			
From		To	
Robert Elleman/R10/USEPA/US		Helen Rueda/R10/USEPA/US@EPA Helen Rueda/R10/USEPA/US	
CC		BCC	
Description			Form Used: Memo
Subject		Date/Time	
unpaired model-observation verification		09/12/2012 09:05 AM	
# of Attachments	Total Bytes	NPM	Contributor
0	2,838		Robert Elleman
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Comments			
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Helen,

I saw a cdf just now for one of my projects and was reminded of your modeling issue. You might be comforted to know that an unpaired model-observation verification scheme has precedent in the air quality modeling world as well. It is commonly done as a second step after a paired space-time comparison to allow modelers to say things like, "it got the ozone hot spot correct in magnitude but shifted off by 5 miles", or "the peak ozone was in the right spot in the right amount but off by a couple hours, which doesn't matter when you consider the form of the national standard for daily ozone". It also has precedent in near-source air pollution modeling, where they call this kind of cumulative distribution function matching exercise a Q-Q plot. For information on the Q-Q plots, Ecology can consult Clint Bowman, their air quality modeler, on this or get in touch with Herman Wong in R10/OEA.

Rob

 Robert Elleman, Ph.D.
 Meteorologist
 EPA Region 10
 Seattle, WA
 elleman.robert@epa.gov

(206) 553-1531

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CC		BCC	
		Mahbubul Islam/R10/USEPA/US@EPA	
Description			Form Used: Reply
Subject		Date/Time	
Re: Weather Data		09/10/2012 06:06 PM	
# of Attachments	Total Bytes	NPM	Contributor
0	6,105		Robert Elleman
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Helen,

Absolutely! I can check on the data, put something rough together with minimal effort, and we can talk through it. That discussion and info might give you all you need, or we might go another step.

What is your timeline for this? I want to make sure we do this preliminary discussion early enough so that any follow on data lookup or analysis can be done by the time you need it all.

In terms of my schedule, it is entirely reasonable for me to slap something together and have a preliminary discussion in the next day or two.

Rob

 Robert Elleman, Ph.D.
 Meteorologist
 EPA Region 10
 Seattle, WA
 elleman.robert@epa.gov

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Helen Rueda

Hi Robert - How is your summer going?

09/10/2012 04:20:24 PM

From: Helen Rueda/R10/USEPA/US
To: Robert Elleman/R10/USEPA/US@EPA,
Date: 09/10/2012 04:20 PM
Subject: Weather Data

Hi Robert -

How is your summer going?

I am working on a project and was wondering if you might have time to look some information up for me or tell me where I could find the data to figure these things out myself. Check out what I have written below. and let me know whether it is something you could do without a lot of time and effort. I have no idea how much work something like this would involve, but I have been impressed with the information you have gotten for me in the past, so I thought I would try you.

I need to get some weather information for the weather stations below used in a model that has become a point of contention. There is also a model in Idaho that is linked to this model so I may have some additional stations there for the same dates, will look into that if this is feasible.

I am interested in whether there is a record showing cooling events such as storms at the weather stations listed below within a day or two prior to, or on these dates:

August 24th 2004,

June 24th 2004

June 30th 2004

These are the weather stations used in the model....I am pretty sure that they are all in Washington state:

Spokane Airport NWS 457938

Mount Spokane Lookout NWS 455675

Little Pend Oreille RAWS xx453416

Newport NWS 455844

Flowery Trail RAWS 323194F2

Tacoma Creek RAWS 3262A224

Teepee Seed Orchard RAWS 3231D7F8

Sullivan Lake Ranger Station NWS 458161

Deer Park Airport 727854 (RAWS #)

Felts Field 727860 (NWS#)

Helen Rueda,
Office of Water, Watershed Unit
Region 10 USEPA
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(503) 326-3280 work
(503) 326-3399 (FAX)

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Rose Galer/DC/USEPA/US		Gary Russo/DC/USEPA/US@EPA	
CC		BCC	
Description			Form Used: Memo
Subject		Date/Time	
Fw: Draft TMDL - WA temperature criteria		08/14/2012 01:58 PM	
# of Attachments	Total Bytes	NPM	Contributor
4	1,437,329		Gary Russo
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Gary-

I'm forwarding an email with background documents, I think the document named "Potential 30-day pooling period" is helpful in setting up the context. Also, I pasted below the link to the draft TMDL in question and both the tribe and state's water quality criteria for temperature.

Thanks in advance for your help!
Rose

Link to draft TMDL:

<https://fortress.wa.gov/ecy/publications/summarypages/1010065.html>

Kalispel Tribal water quality standards

In addition to Washington State temperature criteria, the Kalispel Tribe also has criteria that apply to the Pend Oreille River for a section under its jurisdiction. The United States Environmental

Protection Agency approved the Kalispel Tribe's water quality standards on June 24, 2004. The Kalispel's temperature criteria for the Pend Oreille River are designated to meet the use of adult salmonid migration and includes:

- The criteria for salmon migration are a 7-day average of the daily maximum (7-DADMax) of 18°C.
- 1-day maximum (1-DMax) of 20.5°C.
For all designated uses, if natural conditions are above criteria then human influences can raise water temperatures by no more than 0.3°C.

State of Washington water quality standards

In Washington State the water quality standards are based on the protection of sensitive species and life-stage conditions [WAC 173-201A-200; 2006 edition]. In the Pend Oreille watershed, there are three different designated uses:

- Salmonid spawning, rearing and migration
- Char spawning and rearing
- Core summer salmonid habitat

The applicable designated use for the Pend Oreille River is salmonid spawning, rearing, and migration.

The Washington State Attorney General's Office completed a legal interpretation of the temperature standard for the Pend Oreille River (Appendix F). The Pend Oreille River has special temperature

criteria (WAC173-201A-602) which, in this report, will be referred to as Parts 1 and 2:

Part 1: Temperature shall not exceed a 1-day maximum (1-DMax) of 20°C due to human

activities. When natural conditions exceed a 1-DMax of 20°C, no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3°C;

Part 2: Nor shall such temperature increases, at any time, exceed $t = 34/(T + 9)$

where: t = the allowable temperature increase; and

T = the background temperature measured at a point unaffected by the discharges.

The Pend

Oreille River is affected by discharges from dams in both Washington and Idaho, so the

modeled natural condition, which represents the unaffected river, is used to define T in this

TMDL.

Rose Galer
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----- Forwarded by Rose Galer/DC/USEPA/US on 08/14/2012 04:42 PM -----

From: Sarah Furtak/DC/USEPA/US
To: Rose Galer/DC/USEPA/US@EPA
Date: 08/09/2012 12:36 PM
Subject: email 2 of 2: follow-up from WQS discussion

Draft- deliberative

Hi Rose,

Attached are background materials provided to us by the Kalispel Tribe following the Tribe's visit on July 24. These materials are responsive to several of the questions raised by the informal technical review team at the July 24 EPA/Kalispel Tribe meeting.

If you have any questions, please let me know.

Sarah

202 566 1167

----- Forwarded by Sarah Furtak/DC/USEPA/US on 08/09/2012 12:12 PM -----

From: Sarah Furtak/DC/USEPA/US
To: Michael Haire/DC/USEPA/US@EPA, Julie Reichert/DC/USEPA/US@EPA, Lester Yuan/DC/USEPA/US@EPA, Steve Whitlock/DC/USEPA/US@EPA, James Curtin/DC/USEPA/US@EPA
Cc: David Croxton/R10/USEPA/US@EPA, Ben Cope/R10/USEPA/US@EPA, Helen Rueda/R10/USEPA/US@EPA, Kim Owens/R10/USEPA/US@EPA, Don Martin/R10/USEPA/US@EPA, zwelcker@kanjikatzen.com
Date: 08/01/2012 06:02 PM
Subject: 7/24 Meeting Follow Up

Attached please find documents and a hyperlink from the Kalispel Tribe attorney. These materials are responsive to several of the questions raised by the informal technical review team at the July 24 EPA/Kalispel Tribe meeting.

Sarah

Sarah Furtak
U.S. Environmental Protection Agency
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Phone: (202) 566-1167

----- Forwarded by Sarah Furtak/DC/USEPA/US on 08/01/2012 05:55 PM -----

From: "Zach Welcker" <zwelcker@kanjikatzen.com>
To: Sarah Furtak/DC/USEPA/US@EPA
Cc: "Deane Osterman" <dosterman@kalispeltribe.com>
Date: 07/31/2012 10:29 PM
Subject: 7/24 Meeting Follow Up

Sarah:

The attached documents and hyperlink below contain information that is responsive to several of the questions raised by the panel at the Kalispel Tribe's meeting with EPA Headquarters on July 24, 2012. They establish several points:

- 1) Dr. Massmann's report shows that Ecology's cumulative frequency analysis ("CFA") does indeed mask violations of Washington water quality standards at the Idaho-Washington stateline. It also demonstrates that water flowing across stateline is warmer under existing conditions than it was under natural conditions on most days when there are violations of Kalispel water quality standards.
- 2) The highlighted text in the other attachments establishes:
 - a. Ecology employed a 7-day rolling CFA in response to the regulated community's concerns about lag time, and concluded that the results were similar to a pairwise analysis.
 - b. Ecology employed a 30-day CFA and found that the level of impairment was almost the same as a 7-day CFA. Senior Ecology staff supported applying the 30-day CFA as a means of diffusing an argument from the regulated community about lag time, reasoning that the point is there is still an impairment. Ecology did not provide a scientific basis for using a 30-day CFA.
 - c. Ecology knew that a 60-day CFA would begin to mask impairment as early as April 2008.
- 3) The water quality standards at issue in the Willamette TMDL are based on a seven-day moving average of daily maximum temperature. See Willamette TMDL at 4-8, available at <http://www.deq.state.or.us/wq/tmdls/docs/willamettebasin/willamette/chpt4temp.pdf>. Application of CFA to a 7-DADMax metric does not support applying CFA to the Kalispel Tribe's or State of Washington's 1-DMax temperature standard.

I would very much appreciate it if you would confirm receipt of this email, add the email and attachments to the administrative record, and forward the email on to the members of the review panel and Region 10 (please cc me). Please let us know if the panel has any other questions.

Many thanks.

Zach

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Keta_Waters_July_31_12.pdf



Pickett 7-day v. 30-day comparison table.pdf



Potential 30-day pooling period.pdf



Rolling 7-day average docs.pdf

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Subject		Date/Time	
need your help on interpreting WA temperature criteria - 1DMax		08/13/2012 05:01 AM	
# of Attachments	Total Bytes	NPM	Contributor
0	2,596		Gary Russo
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Gary-

Folks in OWOW need some help interpreting Washington state water quality standards for temperature. OWOW is trying to determine if they can approve a draft TMDL written by Washington that the Kalispel Tribe disagrees with.

Would you have time to today to answer a few questions? Specifically about how Washington is calculating their "1-Day Max" temperature criteria (not to be exceeded). Shari suggested I talk to you. Let me know if you have free moment and I can stop by your cube.

Thanks!
 Rose Galer
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